The aim of surgery for head and neck cancer is to remove cancerous tissue and preserve the functions of the head and neck, such as breathing, swallowing and speech, as much as possible. There are different ways surgeons can operate. The type of operations for the different head and neck cancers are described here.

The surgeons may only need to cut out a small area which will include an area of healthy tissue around the tumour called a margin. If the operation is small the healing is usually fast with few long-term side effects.

For more advanced cancer, an operation will be more extensive and will cause longer-lasting or permanent side effects.

Your doctors will discuss whether surgery is an option for you and the best type of operation for you. Surgery for early cancers may only take about one hour but procedures for advanced cancers can take six to twelve hours. Both are usually done under general anaesthetic. The doctors will discuss any short-term or long-term side effects that might occur. This will help you weigh up the advantages and disadvantages.

If a head and neck cancer has spread to the lymph nodes in your neck or if there is a chance it will spread, your surgeon will probably remove the nodes. This operation is called a neck dissection or lymphadenectomy. In some cases this may be the only surgery you have as the primary cancer will be treated with radiotherapy.

**Types of surgeries**

**Laser surgery**
This is used for small and easily accessible cancers. An intense beam of light is used as a knife to make cuts in the cancerous tissue. Laser surgery is usually more precise and causes less bleeding than open surgery. Laser surgery is done as a day or overnight procedure. The tumour is examined under a microscope by pathologists to make sure it has all been taken out. If this isn't the case you may need to have a second operation.
Open surgery
In open surgery cuts are made through skin and tissue to access the tumour. Sometimes bone needs to be removed too. Surgery can leave scarring or significant changes to the face, mouth or neck, depending on the location of the tumour.

Reconstructive surgery
If you have surgery for more advanced cancer you may have reconstructive surgery at the same time as the main operation or at a later date. Surgeons use skin or tissue from another part of the body, or synthetic material (prosthesis), to rebuild the area. Many head and neck surgeons are experts in reconstructive surgery too but the operation may be carried out by two teams if the reconstruction is done at the same time.

Endoscopic (keyhole) surgery
This may be an option for certain cancers that can be accessed through the nasal cavity. A thin, flexible tube with a camera and light (endoscope) is inserted into the nose or mouth, like in a nasendoscopy. An image is projected onto a screen so the surgeon can see more clearly. Tiny surgical instruments are used directly through the nostrils and no external cuts need to be made to access the tumour.

Surgery for oral cancer
Cancers detected very early can be treated with simple day surgery to remove part of the tongue or mouth. This will heal without side effects in a few weeks. If the cancer is larger surgery may be more extensive and may require a reconstruction to help you chew, swallow or speak. You may also need a neck dissection to remove lymph nodes if there is a chance of the cancer spreading.

Different types of oral surgery include:
- a glossectomy which removes part of the tongue
- a mandibulotomy which cuts through the lower jaw
- a mandibulectomy which removes part/all of the lower jaw
- a maxillectomy which removes part or all of the upper jaw, possibly including upper teeth, part of the eye socket and/or the nasal cavity
- a transoral primary tumour resection which removes the tumour through the mouth.

Surgery for salivary gland cancer
Some tumours found in the salivary glands are benign but surgery is the same as for malignant tumours.

Most salivary gland tumours affect the parotid gland which has two parts. Surgery to remove this gland is called a parotidectomy. Surgeons can often cut inside or under the jaw to reach the area but sometimes they need to cut through the jaw.

Reconstructive surgery may be needed to repair the affected area.

The facial nerve, which controls movement and muscle tone in the face, runs through the parotid gland. It may be damaged during surgery or part of it may be removed if the cancer has grown around it. If the facial nerve is affected the surgeons may be able to rejoin it using a nerve from another part of the body, often the leg (a nerve graft). If successful this will improve movement and appearance on that side of the face.

If the cancer begins under the jaw or tongue the entire gland will be removed along with some surrounding tissue. Nerves controlling the tongue and lower part of the face may be damaged causing some loss of function. If the cancer is in a minor salivary gland, in a paranasal sinus or the larynx, it may be removed with endoscopic surgery.
Surgery for pharyngeal cancer

Early pharyngeal cancers may be treated with either surgery or radiotherapy. If you have surgery, the surgeon will cut out the tumour and a margin of tissue, which is checked by a pathologist to make sure all the tumour has come out.

If the cancer is large or advanced, the surgery is often combined with radiotherapy and possibly chemotherapy. The surgery is more likely to be extensive and may require reconstruction. Often, lymph nodes will be removed from your neck to prevent the cancer spreading.

Different types of pharyngeal surgery include:

- a pharyngectomy which removes part or all of the pharynx
- a mandibulotomy which cuts through the lower jaw
- a mandibulectomy which removes part or all of the lower jaw
- a maxillectomy which removes part or all of the upper jaw, possibly including upper teeth, part of the eye socket and/or the nasal cavity
- a laryngopharyngectomy which removes part or all of the voice box (larynx) and pharynx.

Surgery for laryngeal cancer

If the cancer is at an early stage you may be offered laser surgery. If any of the margins are not clear you may have more tissue removed in a second procedure.

Your voice will recover over six months.

If the cancer has advanced you may need open surgery. The surgeon will work with a speech pathologist to choose a type of operation that reduces the effect on your voice and ability to swallow.

Different types of laryngeal surgery include:

- a total laryngectomy which removes the larynx and separates the windpipe (trachea) from the oesophagus. Without your vocal cords you won’t be able to speak naturally after this procedure but you will work with a speech pathologist to learn ways to communicate.
- a partial laryngectomy which takes out part of the larynx. It is a rare operation because laser surgery has become more common. You will keep part of your voice box and be able to speak but after surgery your voice may be hoarse.

If the thyroid gland is taken out (thyroidectomy) during surgery on the voice box, you will need to take thyroid medication for the rest of your life.

Surgery for nasal and paranasal sinus cancer

Your doctor may advise you to have surgery if the tumour isn’t too close to your brain, eyes or major blood vessels. The aim of surgery is to remove the entire tumour and a small area of normal tissue.

There are various operations for cancers of the nasal cavity and paranasal sinuses – the type you have depends on the location of the tumour. Surgery for paranasal sinus cancer, in particular, varies, depending on which sinuses are affected.

Different types of surgery for nasal cancer include:

- a maxillectomy which removes part or all of the upper jaw, possibly including upper teeth, part of the eye socket and/or the nasal cavity
- a craniofacial resection which removes tissue between the eyes, requiring a cut along the side of the nose
- a lateral rhinotomy which cuts along the edge of the nose to gain access to the nasal cavity and sinuses
- an orbital exenteration which removes the eye
- a rhinectomy which removes part or all of the nose
• endoscopic sinus surgery which is the removal of part of the nasal cavity or sinuses through the nostrils, using an endoscope
• midface degloving where access is gained to your nasal cavity or sinuses by cutting under the upper lip, which means there will be no scar on the face.

Some people also have surgery to remove lymph nodes in the neck (neck dissection or lymphadenectomy).

Your surgeons will plan the operation carefully to avoid damaging healthy tissue. You may have a major operation, with cuts along the edge of the nose, or you may have endoscopic surgery or midface degloving so no cuts are made to the face.

The surgeons will consider how the operation will affect your appearance, and your ability to breathe, speak, chew and swallow.

If they have to remove part or all of your nose, you may get an artificial nose (prosthesis). This will be synthetic or made of tissue from other parts of your body.

After surgery

You may suffer from some of the following after your surgery:

• **Sore throat.** After surgery for early cancer you will have a mild sore throat but can usually go home within 24 hours. After a general anaesthetic you will probably feel quite groggy and your throat may feel sore for up to 24 hours. You may have tubes at the surgery site to drain excess fluid.

• **Changes to the way you breathe.** If your mouth is swollen and breathing is difficult, the surgeon will create a breathing hole in your lower neck (tracheostomy). After most types of surgery this is temporary. If you have a total laryngectomy you will have a permanent opening (stoma) so you can breathe.

• **Dietary changes.** You may have a temporary feeding tube inserted through your nasal passageway for a few days or weeks or, rarely, a permanent feeding tube inserted directly into your stomach. Your team will advise when you can start eating again after surgery. You will usually start with fluids, move on to puréed food and then try soft foods.

The length of time it takes for you to heal will depend on your operation. The surgical wounds may heal by themselves or it may be closed with a row of stitches (sutures).

Long-term effects of surgery

After surgery for early cancer there are generally few long-term side effects. After more extensive surgery many people have to adjust to significant changes. These changes depend on your operation so talk to your doctor about what to expect. You may also see a speech pathologist and/or dietitian before surgery to discuss these issues.

Changes in taste and smell
If you have a craniofacial resection the nerves from your brain that allow you to smell may be removed. This means you will lose your sense of smell and your sense of taste will be affected. If you have a laryngectomy air will no longer pass through your nose which can affect your sense of smell. A speech pathologist can teach you a new technique for smelling.

Changes in swallowing
Surgery may affect your ability to swallow because of a dry mouth or because tissue has been removed or reconstructed in your jaw, mouth or throat. For example, if you have tongue surgery, a flap of skin may be used to reconstruct the tongue. The new tissue has no muscle and you won’t feel any sensation for up to 12 months. You will need to work with a speech pathologist to learn how to use the remaining part of the tongue to swallow and speak.
The voice box and epiglottis are also important for swallowing. These structures act like valves and shut off the airway when swallowing so liquid or food doesn’t go into the lungs. After a partial laryngectomy these structures are affected and may cause food to go down the wrong way into the lungs (aspirate). Aspiration is not a concern if you have a total laryngectomy.

Your dietitian or speech pathologist will let you know safe ways to eat and drink which may include chopping up food or blending it into a purée. If surgery is likely to cause difficulties in eating or drinking you may be given a temporary or permanent feeding tube.

Changes in speaking
Changes to how clearly you speak and/or the quality of your voice depend on the surgery you’ve had. Many people will need speech therapy.

- After oral or nasal surgery speech changes often occur for the same reasons that swallowing is affected, for example because of changes to movement in the tongue or soft palate.
- If teeth are removed before or during surgery they probably won’t be replaced so talk to your surgeon, oral medicine specialist or dentist about how this might affect your speech.
- If part or all of your voice box is removed you will need speech therapy. After a total laryngectomy there are different options for regaining one’s voice.
- As the facial nerve may be damaged during surgery for salivary gland cancer this can impact on the lip muscles used in speaking.

Changes in breathing
If you have a total laryngectomy the surgeon will create a hole in your neck (stoma) so you can breathe and speak.

Changes to appearance
Talk to your doctors about how surgery and reconstruction will affect your appearance. Many types of operations will change the way you look – this may be temporary or permanent. Scarring from surgery is usually visible at first but eventually most scars will fade. Understandably people may be distressed or embarrassed about these changes.

Face
If part of the jaw, nose or skin is removed, your face will look different. Some people will have a reconstruction with a prosthesis which is a soft plastic replacement for the tissue that has been removed. A prosthesis is fitted permanently and blends in with your own features. If you are likely to need a prosthesis the doctor will discuss this with you before the operation.

Jaw
In some cases your surgeon will have to cut through your jaw (mandibulotomy) and reconstruct it with a plate. This involves a cut through your chin and lip, and the scars will be visible for some time.

Neck
If you have a total laryngectomy your face will swell temporarily and the appearance of your neck will change permanently. You will have a hole in your lower neck (stoma) and some scarring.

Changes in vision
If the cancer is in your eye socket the surgeon may have to remove your eye (orbital exenteration). The empty eye socket will be replaced by a sphere of tissue from another part of your body. This keeps the structure of the eye socket. Later you can be fitted for an artificial eye that is painted to look like your remaining eye. The eye is like a large contact lens that fits over the new tissue in the eye socket.

You will still be able to see with your remaining eye but your depth perception and peripheral vision will be poorer. Your changed vision should not prevent you from continuing activities such as driving or playing sport but it may take time to get used to – and accommodate – the changes.

Other side effects caused by surgery

Stiff neck and shoulder
If you have lymph nodes removed you may have ongoing stiffness, numbness in your neck and pain
in your shoulder. Any loss of feeling should come back within twelve months. The shoulder nerve is usually not permanently damaged but may take up to four months to recover. It is important that you keep moving your shoulder so it doesn’t stiffen while the nerve is recovering. Removal of the lymph nodes will also cause some scarring on your neck.

**Fatigue**

After surgery, fatigue can persist for several months, depending on the extent of your treatment. Ask your health care team for information and tips on how to reduce it.

**Information reviewed by:** Dr Tim Iseli, ENT Surgeon, Royal Melbourne Hospital; Katrina Blyth, Senior Speech Pathologist, Royal Prince Alfred Hospital, NSW; Dr David Boadle, Staff Specialist, Medical Oncology, Royal Hobart Hospital; Geoffrey Booth, Consumer; Teresa Brown, Team Leader, Royal Brisbane and Women’s Hospital; Marty Doyle, Co-founder and Facilitator, Head and Neck Cancer Support Group, Brisbane; Dr Peter Foltyn, Dental Department, St Vincent’s Hospital, NSW; Noeline Hunt, Consumer; Dr Michael Jackson, Director, Radiation Oncology Department, Prince of Wales Hospital, NSW; Len McDowall, Consumer; and Cancer Council SA Helpline Consultant.


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